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10/553,411	10/17/2005	Martin Bossert	1454.1629	3710
21171	7590	10/15/2008	EXAMINER	
STAAS & HALSEY LLP			HO, HUY C	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/553,411

**Applicant(s)**

BOSSERT ET AL.

**Examiner**

HUY C. HO

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 June 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 9-20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 17 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Inventor's Patent Application  
6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

The invention application is about a method of transmitting data, which is split into a number of elements, using OFDM technology on a multiple antennas system, read upon reference Sugar as follows.

Sugar teaches a MIMO system and method using antenna diversity for transmitting data in multi-carrier system such as an OFDM system (see col 2 lines 35-67, col 3 lines 1-30, col 7 lines 20-67), therefore Sugar discloses method and system for transmitting data via multiple antennas known as a MIMO system, using plurality of subcarriers in the OFDM technology.

The argued features in the remark about rearrangement of the time-dependent signals after the OFDM modulation reads upon Sugar as Sugar teaches the OFDM modulation for transmitting data over subcarriers via different antennas and represented in form of a vector matrix of different elements of OFDM subcarriers signals, and these elements are adjusted in a cyclic manner (see col 4 lines 15-40, col 7 lines 20-67), thus Sugar discloses the rearrangement of signals when using the OFDM modulation.

As a result, the claimed features were written such that they read upon the cited reference and the rejection is maintained.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 9-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Sugar et al. (US 6,785,520)

As to claim 9, (Previously Presented) Sugar et al. disclose a method of transmitting data by radio, comprising: using a plurality of subcarriers of a frequency band and a plurality of antennas for transmission such that each antenna transmits data using the plurality of the subcarriers (Fig 1, column 2 line 34 - column 4 line 22); dividing data for transmission into a plurality of elements such that the number of data elements corresponds to the number of subcarriers (Fig 8, column 7, lines 20-51); for each antenna, assigning each element to a subcarrier for transmission, such that for at least two antennas and at least one subcarrier, different elements are assigned to said one subcarrier (Fig 8, column 7, lines 20-51); and before performing an OFDM modulation for each antenna, multiplying each element by an antenna-specific and an element-specific factor (Fig 8, column 7, lines 20-51).

As to claim 13, (Previously Presented) Sugar et al. disclose a method of transmitting data by radio, comprising: using a plurality of subcarriers of a frequency band and a plurality of antennas for transmission such that each antenna transmits data using the plurality of the subcarriers (Fig 1, column 2 line 34 - column 4 line 22); dividing data for transmission into a plurality of data elements such that the number of data elements corresponds to the number of subcarriers (Fig 8, column 7, lines 20-51); for each antenna, assigning each element to a subcarrier for transmission, such that for at least two antennas and at least one subcarrier, different elements are assigned to said one subcarrier (Fig 8, column 7, lines 20-51); performing an OFDM modulation for each antenna to produce timing sequences of time-dependent signals (Fig 8, column 7, lines 20-51); and for at least one antenna, rearranging the order of the time-dependent signals after OFDM modulation (Fig 8, column 7, lines 20-51).

As to claim 20, (Previously Presented) Sugar et al. disclose a transmitter (Fig 8) to transmit data by radio using a plurality of subcarriers of a frequency band and a plurality of antennas for transmission such that each antenna transmits data using the plurality of subcarriers (Fig 8, column 7, lines 20-51), comprising: division means (Fig 8, column 7, lines 20-51) for dividing the data into a

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plurality of elements such that the number of elements corresponds with the number of subcarriers; and an OFDM modulator (Fig 8, column 7, lines 20-51) to perform OFDM modulation for each antenna to produce time- dependent signals; wherein the transmitter comprises either: multiplication means (Fig 8, label 510) for multiplying each element for each antenna by an antenna-specific and element-specific factor before OFDM modulation (OFDM), or rearrangement means (Fig 8, column 7, lines 20-51) for rearranging the order of the time-dependent signals after OFDM modulation.

As to claim 10, (Previously Presented) Sugar et al. disclose wherein the factor is a complex or real number, the absolute value of the factor being 1 (column 2 line 34 - column 4 line 22).

As to claim 11, (Previously Presented) Sugar et al. disclose wherein for at least two antennas a common pattern is used to assign each element to a corresponding subcarrier (Fig 8, column 7, lines 20-51).

As to claim 12, (Previously Presented) Sugar et al. disclose wherein the common pattern is a cyclic permutation (Fig 8, column 7, lines 20-51).

As to claim 14, (Currently Amended) Sugar et al. disclose wherein for at least two antennas, the order is rearranged in accordance with a rearrangement common pattern (Fig 8, column 7, lines 20-51).

As to claim 15, (Currently Amended) Sugar et al. disclose wherein the rearrangement common pattern is a cyclic permutation (Fig 8, column 7, lines 20-51).

As to claim 16, (Currently Amended) Sugar et al. disclose wherein for at least two antennas an assignment common pattern is used to assign each element to a corresponding subcarrier (Fig 8, column 7, lines 20-51).

As to claim 17, (Currently Amended) Sugar et al. disclose wherein the common pattern is a cyclic permutation (Fig 8, column 7, lines 20-51).

As to claim 18, (Previously Presented) Sugar et al. disclose wherein for at least two antennas a common pattern is used to assign each element to a corresponding subcarrier (Fig 8, column 7, lines 20-51).

As to claim 19, (Previously Presented) Sugar et al. disclose wherein the common pattern is a

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cyclic permutation (Fig 8, column 7, lines 20-51).

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY C. HO whose telephone number is (571)270-1108. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Eisen, can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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10/10/2008

/Huy Ho/

/Alexander Eisen/

Supervisory Patent Examiner, Art Unit 2629